

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. § 371**

449122026200

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/089252
Not yet assigned

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/DE00/03279

September 20, 2000

September 28, 1999

TITLE OF INVENTION

**SYSTEM AND METHOD FOR HANDLING AN INCOMING OR OUTGOING CALL TO OR FROM A
SUBSCRIBER TERMINAL OF A SUBSCRIBER GROUP (AS AMENDED)**

APPLICANT(S) FOR DO/EO/US

Patrick KLEINER et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
14. ☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☒ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items: 1) Application Data Sheet; 2) Int'l Search Report; 3) IPER; 4) Return receipt postcard.

CERTIFICATE OF HAND DELIVERY

I hereby certify that this correspondence is being hand filed with the United States Patent and Trademark Office in Washington, D.C. on March 28, 2002.

Melissa Garton
Melissa Garton

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)

INTERNATIONAL APPLICATION NO.

ATTORNEY DOCKET NO.

Not yet assigned **10/089252**

PCT/DE00/03279

449122026200

21. ☒ The following fees are submitted:CALCULATIONS
PTO USE ONLY**BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):**

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO.....\$1,040.00

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO.....\$890.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....\$740.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provision of PCT Article 33(1)-(4)\$710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4)\$100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$890.00

☒ Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from
the earliest claimed priority date (37 CFR 1.492(e)).

\$0

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	- 20 =		x \$18.00
Independent claims	- 3 =		x \$84.00

\$0

\$0

☒ MULTIPLE DEPENDENT CLAIM(S) (if applicable)

+ \$280.00

\$0

TOTAL OF ABOVE CALCULATIONS =

\$890.00

☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced
by 1/2.

\$0

SUBTOTAL =

\$890.00

☒ Processing fee of \$130.00 for furnishing the English translation later than
☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).

+

\$0

TOTAL NATIONAL FEE =

\$890.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **\$40.00 per property**

+

\$40.00

TOTAL FEES ENCLOSED =

\$930.00

Amount to be refunded:	\$
charged:	\$

- a. ☒ Please charge my **Deposit Account No. 03-1952** (referencing Docket No. 449122026200) in the amount of \$930.00 to cover the above fees. A duplicate copy of this sheet is enclosed.
- b. ☒ The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment to **Deposit Account No. 03-1952** (referencing Docket No. 449122026200).

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Kevin R. Spivak
Morrison & Foerster LLP
2000 Pennsylvania Avenue, N.W.
Washington, D.C. 20006-1888

SIGNATURE

Kevin R. Spivak
Registration No. 43,148

March 28, 2002

CERTIFICATE OF HAND DELIVERY

I hereby certify that this correspondence is being hand filed with the United States Patent and Trademark Office in Washington, D.C. on March 28, 2002.


Melissa Garton

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Patrick KLEINER et al.

Serial No.: Not yet assigned

Filing Date: March 28, 2002

For: SYSTEM AND METHOD FOR
HANDLING AN INCOMING OR
OUTGOING CALL TO OR FROM
A SUBSCRIBER TERMINAL OF A
SUBSCRIBER GROUP (AS
AMENDED)

Examiner: Not yet assigned

Group Art Unit: Not yet assigned

PRELIMINARY AMENDMENT

BOX PCT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination on the merits, please amend this application as follows:

In the Specification:

Please replace the Title with the following rewritten Title:

**SYSTEM AND METHOD FOR HANDLING AN INCOMING OR OUTGOING CALL
TO OR FROM A SUBSCRIBER TERMINAL OF A SUBSCRIBER GROUP**

In the Claims:**What is claimed is:**

1. (Amended) A method for handling an incoming call to or an outgoing call from a subscriber terminal of a subscriber group within a digital telecommunications switching center of a telecommunications network, comprising:

providing at least one of a connection for the transmission of signaling information and useful information between a calling subscriber terminal and an accepting subscriber terminal being switched when there is an incoming call in the digital telecommunications switching center,

or a connection for the transmission of signaling information and useful information between the calling subscriber terminal of the subscriber group and the accepting subscriber terminal being switched when there is an outgoing call in the digital telecommunications switching center; and

setting up a connection for the transmission of pure signaling information between the calling subscriber terminal and the accepting subscriber terminal of the subscriber group in the digital telecommunications switching center.

2. (Amended) The method as claimed in claim 1, wherein each subscriber terminal of the subscriber group is assigned a primary call number and at least one associated call number, each corresponding to the primary call number of another subscriber terminal of the subscriber group.

3. (Amended) The method as claimed in claim 1, wherein when an incoming call directed to a first subscriber terminal of the subscriber group is transferred by a second subscriber terminal of the subscriber group in the digital telecommunications switching center, switching a connection for the transmission of signaling information and useful information to the second subscriber terminal, and maintaining a connection for the transmission of pure signaling information to the first subscriber terminal.

4. (Amended) The method as claimed in claim 1, wherein before an incoming call which is directed to a first subscriber terminal and which is associated with the subscriber group is accepted or transferred by a second subscriber terminal which is associated with the subscriber group, assigning the subscriber information which is associated with the first subscriber terminal and which is obtained from a central database of the digital telecommunications switching center, for the duration of the connection, to a subscriber line group which is located in the digital telecommunications switching center and connects the second subscriber terminal.

5. (Amended) The method as claimed in claim 2, wherein before an outgoing call which originates from a subscriber terminal under the associated number is initiated, assigning the subscriber information which is associated with the primary call number and is obtained from a central database of the digital telecommunications switching center, for the duration of the connection, to a subscriber line group which is located in the digital telecommunications switching center and connects the subscriber terminal.

Please add new claims 6-8:

6. (New) The method as claimed in claim 2, wherein when an incoming call directed to a first subscriber terminal of the subscriber group is transferred by a second subscriber terminal of the subscriber group in the digital telecommunications switching center, switching a connection for the transmission of signaling information and useful information to the second subscriber terminal, and maintaining a connection for the transmission of pure signaling information to the first subscriber terminal.

7. (New) The method as claimed in claim 3, wherein before an outgoing call which originates from a subscriber terminal under the associated number is initiated, assigning the subscriber information which is associated with the primary call number and is obtained from a central database of the digital telecommunications switching center, for the duration of the connection, to a subscriber line group which is located in the digital telecommunications switching center and connects the subscriber terminal.

8. (New) A system for handling an incoming call to or an outgoing call from subscriber terminals of a subscriber group within a digital telecommunications switching center of a telecommunications network, comprising:

a first connection for the transmission of signaling information and useful information between a calling subscriber terminal and an accepting subscriber terminal being switched when there is an incoming call in the digital telecommunications switching center,

or the first connection for the transmission of signaling information and useful information between the calling subscriber terminal of the subscriber group and the accepting

subscriber terminal being switched when there is an outgoing call in the digital telecommunications switching center; and

a second connection for the transmission of signaling information between the calling subscriber terminal and the accepting subscriber terminal of the subscriber group in the digital telecommunications switching center.

In the Abstract:

Please replace the Abstract with the substitute Abstract attached hereto.

REMARKS

Amendments to the specification have been made and are submitted herewith in the attached Substitute Specification. A clean copy of the specification and a marked-up version showing the changes made are attached herewith. The claims and abstract have been amended in the attached Preliminary Amendment. All amendments have been made to place the application in proper U.S. format and to conform with proper grammatical and idiomatic English. None of the amendments herein are made for reasons related to patentability. No new matter has been added.

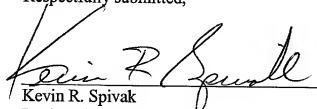
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to

Deposit Account No. 03-1952 referencing docket no. 449122026200. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: March 28, 2002


Kevin R. Spivak
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Facsimile: (202) 263-8396

VERSION WITH MARKINGS TO SHOW CHANGES MADE

For the convenience of the Examiner, the changes made are shown below with deleted text in strikethrough and added text in underline.

In the Specification:

Please replace the Title with the following rewritten Title:

SYSTEM AND METHOD FOR HANDLING AN INCOMING OR OUTGOING CALL TO OR FROM A SUBSCRIBER TERMINAL OF A SUBSCRIBER GROUP

In the Claims:

Patent claims What is claimed is:

1. (Amended) A method for handling an incoming call to ~~a subscriber terminal (TLN-A)~~ of a subscriber group or an outgoing call from ~~such a subscriber terminal (TLN-B)~~ of a subscriber group within a digital telecommunications switching center of a telecommunications network, ~~at least one further subscriber terminal (TLN-C; TLN-A or TLN-B) being assigned to the subscriber group, and~~ comprising:
 - providing at least one of a connection for the transmission of signaling information and useful information between ~~any a~~ a calling subscriber terminal (TLN-F) and the ~~an accepting~~ an accepting subscriber terminal (TLN-B) ~~accepting the call, in a subscriber group, being switched when there is an incoming call in the digital telecommunications switching center(VST),~~
 - or a connection for the transmission of signaling information and useful information between the calling subscriber terminal (TLN-B) of the subscriber group and ~~any called the~~ accepting subscriber terminal (TLN-F) being switched when there is an outgoing call in the digital telecommunications switching center(VST), ~~characterized; and~~ and
 - ~~in that, in the aforesaid cases, in addition in each case~~ setting up a connection for the transmission of pure signaling information between the calling subscriber terminal (TLN-A or TLN-B) and the ~~at least one further~~ and the accepting subscriber terminal (TLN-C; TLN-A or TLN-B) of the subscriber group ~~is set up in the digital telecommunications switching center.~~

2. (Amended) The method as claimed in claim 1, ~~characterized in that~~ **wherein** each subscriber terminal (TLN-A, TLN-B, TLN-C) of the subscriber group is assigned a primary call number and at least one associated call number, ~~which each corresponds~~ **corresponding** to the primary call number of ~~the at least one further~~ **another** subscriber terminal of the subscriber group.

3. (Amended) The method as claimed in claim 1 or 2, ~~characterized in that,~~ **wherein** when an incoming call directed to a first subscriber terminal (TLN-A) of the subscriber group is transferred by a second subscriber terminal (TLN-B) of the subscriber group in the digital telecommunications switching center (VST), **switching** a connection for the transmission of signaling information and useful information is ~~switched~~ to the second subscriber terminal, and **only maintaining** a connection for the transmission of pure signaling information is ~~maintained~~ to the first subscriber terminal.

4. (Amended) The method as claimed in ~~one of the preceding claims,~~ **characterized in that, claim 1, wherein** before an incoming call which is directed to a first subscriber terminal (TLN-A) **and** which is associated with the subscriber group is accepted or transferred by a second subscriber terminal which is associated with the subscriber group (TLN-B), **assigning** the subscriber information (TI) which is associated with the first subscriber terminal and which is obtained from a central database (DB) of the digital telecommunications switching center is ~~assigned,~~ for the duration of the connection, **to the a** subscriber line group (A3) which is ~~present~~ **located** in the digital telecommunications switching center (VST) ~~in order to connect~~ **and connects** the second subscriber terminal.

5. (Amended) The method as claimed in ~~one of claims 2 to 3,~~ **characterized in that claim 2, wherein** before an outgoing call which originates from a subscriber terminal (TLN-B) under the associated number ~~instead of under the primary number~~ is initiated, **assigning** the subscriber information (TI) which is associated with the primary call number and is obtained from a central database (DB) of the digital telecommunications switching center ~~is assigned,~~ for the duration of the connection, **to the a** subscriber line group (A3) which is ~~present~~ **located** in the digital

telecommunications switching center (VST), in order to connect **and connects** the subscriber terminal.

Please add new claims 6-8:

6. **(New) The method as claimed in claim 2, wherein when an incoming call directed to a first subscriber terminal of the subscriber group is transferred by a second subscriber terminal of the subscriber group in the digital telecommunications switching center, switching a connection for the transmission of signaling information and useful information to the second subscriber terminal, and maintaining a connection for the transmission of pure signaling information to the first subscriber terminal.**

7. **(New) The method as claimed in claim 3, wherein before an outgoing call which originates from a subscriber terminal under the associated number is initiated, assigning the subscriber information which is associated with the primary call number and is obtained from a central database of the digital telecommunications switching center, for the duration of the connection, to a subscriber line group which is located in the digital telecommunications switching center and connects the subscriber terminal.**

8. **(New) A system for handling an incoming call to or an outgoing call from subscriber terminals of a subscriber group within a digital telecommunications switching center of a telecommunications network, comprising:**

a first connection for the transmission of signaling information and useful information between a calling subscriber terminal and an accepting subscriber terminal being switched when there is an incoming call in the digital telecommunications switching center,

or the first connection for the transmission of signaling information and useful information between the calling subscriber terminal of the subscriber group and the accepting subscriber terminal being switched when there is an outgoing call in the digital telecommunications switching center; and

a second connection for the transmission of pure signaling information between the calling subscriber terminal and the accepting subscriber terminal of the subscriber group in the digital telecommunications switching center.

In the Abstract:

Please replace the Abstract with the substitute Abstract attached hereto.

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SYSTEM AND METHOD FOR HANDLING AN INCOMING OR OUTGOING CALL TO OR FROM A SUBSCRIBER TERMINAL OF A SUBSCRIBER GROUP

Abstract

When there is an incoming or outgoing call from or to a subscriber terminal of a subscriber group, in addition in each case a connection for the transmission of pure signaling information between the calling subscriber terminal and at least one further subscriber terminal of the subscriber group is set up in the digital telecommunications switching center.

Description

Method for handling an incoming or outgoing call to or from a subscriber terminal of a subscriber group

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The invention relates to a method for handling an incoming call to a subscriber terminal of a subscriber group or an outgoing call from such a subscriber terminal, within a digital telecommunications switching center of a telecommunications network according to the preamble of patent claim 1.

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In this context, when there is an incoming call a connection via which the signaling and useful information can be transmitted between any calling subscriber terminal and the subscriber terminal accepting the call, in the subscriber group, is switched in the digital telecommunications switching center. In the case of an outgoing call, a connection via which signaling information and useful information can be transmitted between the calling subscriber terminal of the subscriber group and any called subscriber terminal is switched in the digital telecommunications switching center.

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The subscriber terminals which are directly connected to such a telecommunications switching center of a telecommunications network via subscriber lines can be combined to form a subscriber group. The digital telecommunications switching center can then provide the subscribers associated with the subscriber group with virtually the same performance features which a private branch exchange (PBX) would offer them if their subscriber terminals were connected to one. Such subscriber groups are known, for example, by the name Centrex Group (Centrex = Central Office and exchange). A subscriber group can also be represented by a fixed subgroup or by a fixed team within the Centrex Group.

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or by a fixed team within the Centrex Group.

Typical performance features which are to be made available to the Centrex subscribers, and which correspond to a certain extent to those of a private branch exchange are described for the most part in a customer brochure, EWSD GeoCentrex: The Best Catch for Your Network" from Siemens AG, Geschäftsgebiet Telekommunikationsnetze [Telecommunications Networks Division] Hofmannstrasse 51, D-81359 Munich, published in 1995, order number A 30808-X3093-X100-1-7635, on pages 25-57 and 65-75, for example

- a separate group-internal numbering plan
- access to the telecommunications network by means of an access code
- Centrex Group number for incoming calls to the Centrex Group
- special call handling for Centrex internal connections
- exchange access for incoming/outgoing calls
- call forwarding
- call transfer
- various types of acoustic signals ("ringing") etc.

A further, and at the same time important, performance feature for Centrex subscribers is what is referred to as the team function, in particular with the "secretarial" function or "manager/secretary" function:

the following is required of the team function:

- all or some of the Centrex subscribers are combined to form a group, referred to as a team.
- All the call numbers of this group are available to all the team members.
- An incoming call to any call number of a subscriber

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5 terminal which is associated with the group is signaled to each subscriber terminal, it being possible for the audible signal to be different at the subscriber terminal to which the call is directed, from the audible signals at the other subscriber terminals.

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displayed at each subscriber terminal of the group by means of condition lamps.

- It is to be possible to accept an incoming call at any subscriber terminal with the features (for example access authorizations) corresponding to the dialed call number.
- It is to be possible to initiate outgoing calls from each subscriber terminal with the features corresponding to the call number of the calling subscriber.
- It is to be possible to carry out the technical switching and administrative sequences during the connection setup or release of incoming and outgoing calls.

The previously known sequence for connection setup or release of incoming and outgoing calls within a digital telecommunications switching center cannot fulfill the abovementioned requirements.

When there is a known sequence for connection setup or release, an incoming call is signaled to all the subscriber terminals of a Centrex subgroup (team) and a useful connection in the direction of each subscriber terminal is switched by the digital telecommunications switching center. That called subscriber terminal by means of which the connection accepts by means of loop closure, receives the call. Connections which are switched to the other subscriber terminals are cleared in the digital telecommunications switching center.

An outgoing call which is initiated by a Centrex subgroup subscriber is carried out as usual. The explained known sequence for connection setup or release can, as already mentioned, hardly satisfy one of the abovementioned requirements placed on the team function. The known procedure is particularly lacking in condition information for all the subscriber terminals which belong to the "team" and in the

is particularly lacking in condition information for all the subscriber terminals which belong to the "team" and in the execution of a call acceptance or an occupation by an outgoing call in a way which corresponds to the subscriber features.

Furthermore, US Patent 5,920 619 discloses a regional telephone network system which offers Centrex services, a closed subscriber group being distributed among various telephone switching centers as subgroups. The distribution of the subscriber groups can be implemented in such a way that a subscriber database which is typical of a table is stored in each switching center with subscribers assigned to at least one of the closed subscriber group. The database is connected to this subscriber group and contains all the necessary information for implementing the Centrex services so that if the call control of the switching center detects, on the basis of the subscriber data, that the subscriber belongs to a closed subscriber group, it can use the subscriber data during the call setup. However, the known solution is focused on the implementation of subscriber groups within a Centrex system which is distributed among a plurality of switching centers so that this approach does not provide a satisfactory solution for the problem described above either.

The object of the invention is then to configure a method of the type specified in the preamble of patent claim 1 to the effect that the aforesaid requirements placed on performance features associated with subscriber groups can be fulfilled.

This object is achieved by means of the features specified in the preamble of claim 1. Advantageous refinements of the invention are characterized in the

subclaims.

According to the invention, this is achieved in that, in the cases mentioned at the beginning, when there is
5 an incoming or outgoing call in the digital telecommunications switching center, in each case what is referred to as a virtual connection from the calling subscriber terminal to the one subscriber terminal, or to the further subscriber terminals, of the subscriber group is set up, in addition to the physical connection
10 which is switched through in the telecommunications switching center and via which signaling information and useful information can be transmitted. Only signaling information is transmitted via the at least one virtual connection. Useful information is transmitted from or to the subscriber terminal via the digital telecommunications switching center only if one of the further subscriber terminals accepts or transfers the incoming or outgoing call. A connection
15 is switched through physically in the telecommunications switching center in order to transmit useful information.
20

By means of signaling information which can be
25 transferred via the at least one virtual connection, the at least one further subscriber terminal can be

condition of the subscriber terminal which accepts the call or from which the call starts.

As a result of the fact that the virtual connection appears to the subscriber to be a genuine physical connection, the performance features of the team function can be processed both with subscriber terminals with equal access rights in the subscriber group and with subscriber terminals which are to be handled differently in the subscriber group (for example manager/secretary function).

One advantageous embodiment of the invention provides the following:

All the call numbers of the subscriber group are available to all the subscriber terminals, each subscriber terminal being assigned a call number as what is referred to as a primary call number. The rest of the call numbers within the subscriber group are assigned to the respective subscriber terminal as what are referred to as associated call numbers. In other words, each subscriber terminal of the subscriber group is assigned both a primary call number and at least one associated call number which each corresponds to the primary call number of the at least one further subscriber terminal of the subscriber group.

The advantage of this call number assignment is that an incoming call which, by selection of a call number, is directed to a subscriber terminal to which the selected call number is assigned as a primary call number is physically switched through, while the call to the other subscriber terminals to which the selected call number is respectively assigned as an associated call number is not made available via a physical connection but rather via a virtual connection, and thus indicated.

The type of acoustic signal (for example ringing, attention tone) can differ between the subscriber terminal to which the selected call number is assigned as a primary call number, and the further or remaining
5 subscriber terminals to which the selected call number is assigned as an associated call number. Accordingly, the subscriber terminal with a selected primary call number "rings" and an attention tone is sounded at the further or remaining subscriber terminals.

10

The load-carrying capacity of the invention is apparent in particular in conjunction with further embodiments according to the invention.

15 One development of the invention provides that when an incoming call directed to a first subscriber terminal is transferred by a second subscriber terminal of the subscriber group in the digital telecommunications switching center, a connection is physically switched
20 through to the second subscriber terminal and a virtual connection is switched through to the first subscriber terminal. That is to say signaling and useful information is transmitted from and to the second subscriber terminal, whereas only signaling information
25 is transferred from and to the first subscriber terminal.

In this resource-saving way it is possible for each subscriber terminal of the subscriber group to be
30 informed of the current condition or changes in condition and remains so informed. For the subscriber there appears to be no distinction between a physically switched-through connection and what is referred to as a virtual connection.

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Further advantageous refinements of the invention relate to method sequences which take place before technical switching call handling of an incoming call and of an outgoing call.

Then, in the event that a call which is directed to a first subscriber terminal is not accepted or transferred by the first but rather by a second
5 subscriber terminal of the subscriber group, the subscriber information which is associated with the first subscriber terminal and is obtained from a central database of the telecommunications switching center is assigned, for the duration of the connection,
10 to the subscriber line group present in the telecommunications switching center in order to connect the second subscriber terminal.

In the event of an outgoing call that leaves a
15 subscriber terminal under an associated call number instead of under the primary call number, the subscriber information which is associated with the primary call number and is obtained from a central database of the telecommunications switching center is
20 assigned, for the duration of the connection, to the subscriber line group which is present in the telecommunications switching center in order to connect the subscriber terminal.

25 The aforesaid subscriber information may be, for example, access authorizations or restrictions, different tariff models etc.

The advantage of the assignment of the subscriber
30 information which takes place before the technical switching call handling lies, in particular, in the fact that the subscriber information is always available to the subscriber line groups on an updated basis. No consistency tests are necessary because of
35 the temporary character of the subscriber information which is available locally and the subscriber line group. In addition, the previous standard administrative and switching technical sequences remain unchanged. In addition, when there are technical

protection measures in the case of a new start after a Hardware/Software fault, it is not safe to take this temporarily assigned subscriber information into account.

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An exemplary embodiment of the invention will be explained in more detail below with reference to a drawing, in which:

10 Figure 1 shows the handling according to the invention of an incoming call,

Figure 2 shows the handling according to the invention of an incoming call, which is directed to a first
15 subscriber terminal and which is accepted or transferred by a second subscriber terminal, and

Figure 3 shows the handling according to the invention of an outgoing call which is initiated by a subscriber
20 terminal under an associated call number instead of under the primary call number.

Figure 1 shows a digital telecommunications switching center VST with a Centrex functionality. A plurality of
25 subscriber terminals, for example TLN-A, TLN-B, TLN-C and TLN-F which are characterized by telephone sets are connected via subscriber lines to the digital telecommunications switching center, the subscriber terminals TLN-A, TLN-B and TLN-C forming, for example,
30 a team within a Centrex Group. The subscriber terminal TLN-F will be referred to below as a foreign subscriber terminal because it does not belong to the team.

In addition, a number of components of a digital
35 telecommunications switching center which is generally used in a telecommunications network are represented schematically in figure 1: a switching network KN, a central or database DB and subscriber line groups, for example A1, A2, A3 and A4, for connecting subscriber

terminals, for example TLN-A, TLN-F, TLN-B and TLN-C.

The numbers represented on the telephone sets represent the call numbers assigned to the respective subscriber terminal. For example, the call number "9999" is represented on the subscriber terminal TLN-F. These call numbers are to be understood only symbolically. In reality, standardized call numbers, for example E.164, are used in a telecommunications network.

The subscriber terminals TLN-A, TLN-B and TLN-C which belong to the team have different types of call numbers. The numbers characterized with a preceding letter "P" correspond to the call number which is primarily assigned to the respective subscriber terminal within the team (for example P4711 is the primary call number of the subscriber terminal TLN-A). The numbers characterized with a preceding letter "A" signify the call numbers which are associated with the respective subscriber terminal and which correspond in each case to the primary call numbers of the other subscriber terminals present in the team. For example, the associated call numbers A5000 and A6000, which correspond to the primary call numbers P5000 of the subscriber terminal TLN-B and to the primary call number P6000 of the subscriber terminal TLN-C are represented on the subscriber terminal TLN-A. The other associated call numbers which are indicated on the subscriber terminals symbolize that further subscriber terminals which are not illustrated in the figure can also be imagined as belonging to the team.

In addition, small circles which symbolize condition lamps or LEDs are arranged on the subscriber terminals TLN-A, TLN-B and TLN-C. Otherwise, in each case a keypad, for example for inputting call number and a telephone receiver, which do not play any significant role for the method according to the invention, are also indicated on the subscriber terminals.

In the figure, the meanings of forms or types of lines and of character symbols are also represented in the form of a key which is given in a box.

5

It would be assumed below that a call which is directed to the subscriber terminal TLN-A and which originates from the foreign subscriber terminal TLN-F arrives at said subscriber terminal TLN-A. Accordingly, the
10 subscriber terminal TLN-A "rings". In addition, the condition lamp which is labeled with the primary call number "P4711" on the subscriber terminal TLN-A "flashes". In the telecommunications switching center VST, a connection is physically switched from the
15 subscriber line group A2 to the subscriber line group A1 by means of the switching network KN in order to set up a connection. Both signaling information and useful information can be transmitted via this connection. According to the invention, in each case
20 only what are referred to as virtual connections to the other subscriber terminals TLN-B and TLN-C are set up from the subscriber line group A2 to the subscriber line groups A3 and A4. That is to say only signaling information can be transmitted via these virtual
25 connections. Consequently, the incoming call is signaled to the subscriber terminals TLN-B and TLN-C in the form of an attention tone and the condition lamp which is labeled with the associated call number "A4711" lights up on both terminals.

30

In Figure 2, as well as the components already explained, subscriber information TI, for example subscriber access authorizations or restrictions, tariff models etc., which is stored in the central
35 database DB is additionally symbolized.

Figure 2 shows, for example, the case in which the incoming call which is indicated in figure 1 is not accepted by the subscriber terminal TLN-A but rather

accepted or transferred, for example, by a team member at the subscriber terminal TLN-B. The method proceeds according to the invention as follows:

- 5 At the subscriber terminal TLN-B, after the signaling of the incoming call, the desire to accept the call is first signaled to the telecommunications switching center by, for example, pressing on the respective call number key (associated call number) in the symbolized
10 keypad. Then, the subscriber information relating to the subscriber terminal TLN-A which is stored in the database DB is assigned to the subscriber line group A3 for local temporary storage. Then, the previously present virtual connection from the subscriber line
15 group A2 to the subscriber line group A3 is converted into a physical connection so that as a result not only signaling information but also useful information can be transmitted from and to the subscriber terminal TLN-B. In other words, the call which has arrived is
20 put through to the subscriber terminal TLN-B, and the connection is set up at the TLN-B end by loop closure.

- Here, the existing virtual connection to the subscriber terminal TLN-C is retained and the physical connection
25 which has been switched through to the subscriber terminal TLN-A is converted into a virtual connection so that only signaling information can then pass from and to the subscriber terminal TLN-A.

- 30 The switching through of a physical connection to the subscriber terminal TLN-B (call acceptance) also causes the condition lamp "A4711" to no longer flash but instead light up continuously. The condition change is also signaled to the other subscriber terminals TLN-A
35 and TLN-C via the virtual connections so that the condition lamp "P4711" on the terminal TLN-A and the condition lamp "A4711" on the terminal TLN-C light up continuously.

Figure 3 shows the case of an outgoing call. Here, the components illustrated in figure 3 correspond to those in figure 2.

- 5 It is also assumed that an outgoing call from a subscriber terminal, for example TLN-B, is initiated under an associated call number instead of under the primary call number. Here, it is signaled to the telecommunications switching center that although the
- 10 call is to be set up from the subscriber terminal TLN-B, the subscriber information relating to the subscriber terminal TLN-A is to be used for the connection setup. Consequently, the subscriber information TI relating to the subscriber terminal
- 15 TLN-A is first assigned to the subscriber line group A3 for local temporary storage. Then, a connection setup to the desired subscriber terminal, for example TLN-F, is carried out in the usual way. In the telecommunications switching center, the physical
- 20 connection from the subscriber line group A3 to the subscriber line group A2, on which connection both signaling information and useful information can be transmitted, is switched by the switching network. In each case, the virtual connections, already mentioned,
- 25 in the telecommunications switching center are set up to the other subscriber terminals, for example TLN-A and TLN-C of the team. Corresponding condition information or condition changes can thus be signaled to each subscriber terminal of the team. The condition
- 30 lamp "P4711" thus lights up on the subscriber terminal TLN-A, the condition lamp "A4711" lights up on the subscriber terminal TLN-B and the condition lamp "A4711" lights up on the subscriber terminal TLN-C.
- 35 The central idea according to the invention, that within a subscriber group a subscriber terminal maintains a "real" connection for the transmission of

signaling information and useful information and in each case only "virtual" connections are made available to the other subscriber terminals of the subscriber group, is not restricted to the examples described

5 above. Further variants for handling a call acceptance or call transfer as well as for handling outgoing calls with respect to subscriber groups are conceivable at all times.

SECRET

Patent claims

1. A method for handling an incoming call to a subscriber terminal (TLN-A) of a subscriber group or an outgoing call from such a subscriber terminal (TLN-B) within a digital telecommunications switching center of a telecommunications network, at least one further subscriber terminal (TLN C; TLN-A or TLN-B) being assigned to the subscriber group, and

- a connection for the transmission of signaling information and useful information between any calling subscriber terminal (TLN-F) and the subscriber terminal (TLN-B) accepting the call, in a subscriber group, being switched when there is an incoming call in the digital telecommunications switching center (VST),
- or a connection for the transmission of signaling information and useful information between the calling subscriber terminal (TLN-B) of the subscriber group and any called subscriber terminal (TLN-F) being switched when there is an outgoing call in the digital telecommunications switching center (VST), characterized
- in that, in the aforesaid cases, in addition in each case a connection for the transmission of pure signaling information between the calling subscriber terminal (TLN-A or TLN-B) and the at least one further subscriber terminal (TLN-C; TLN-A or TLN-B) of the subscriber group is set up in the digital telecommunications switching center.

2. The method as claimed in claim 1, characterized in that each subscriber terminal (TLN-A, TLN-B, TLN-C) of the subscriber group is assigned a primary call number and at least one associated call number, which each corresponds to the primary call number of the at least one further subscriber terminal of the subscriber group.

3. The method as claimed in claim 1 or 2, characterized in that when an incoming call directed to a first subscriber terminal (TLN-A) of the subscriber group is transferred by a second subscriber terminal (TLN-B) of the subscriber group in the digital telecommunications switching center (VST), a connection for the transmission of signaling information and useful information is switched to the second subscriber terminal, and only a connection for the transmission of pure signaling information is maintained to the first subscriber terminal.

4. The method as claimed in one of the preceding claims, characterized in that, before an incoming call which is directed to a first subscriber terminal (TLN-A) which is associated with the subscriber group is accepted or transferred by a second subscriber terminal which is associated with the subscriber group (TLN-B), the subscriber information (TI) which is associated with the first subscriber terminal and which is obtained from a central database (DB) of the digital telecommunications switching center is assigned, for the duration of the connection, to the subscriber line group (A3) which is present in the digital telecommunications switching center (VST) in order to connect the second subscriber terminal.

5. The method as claimed in one of claims 2 to 3, characterized in that before an outgoing call which originates from a subscriber terminal (TLN-B) under the associated number instead of under the primary number is initiated, the subscriber information (TI) which is associated with the primary call number and is obtained from a central database (DB) of the digital telecommunications switching center is assigned, for the duration of the connection, to the subscriber line group (A3) which is present in the digital telecommunications switching center (VST), in order to connect the subscriber terminal.

Abstract

Method for handling an incoming or outgoing call to or from a subscriber terminal of a subscriber group

When there is an incoming or outgoing call from or to a subscriber terminal (TLN-A) of a subscriber group, in addition in each case a connection for the transmission of pure signaling information between the calling subscriber terminal (TLN-F) and at least one further subscriber terminal (TLN-B, TLN-C) of the subscriber group is set up in the digital telecommunications switching center (VST).

Figure 1

FIG 1

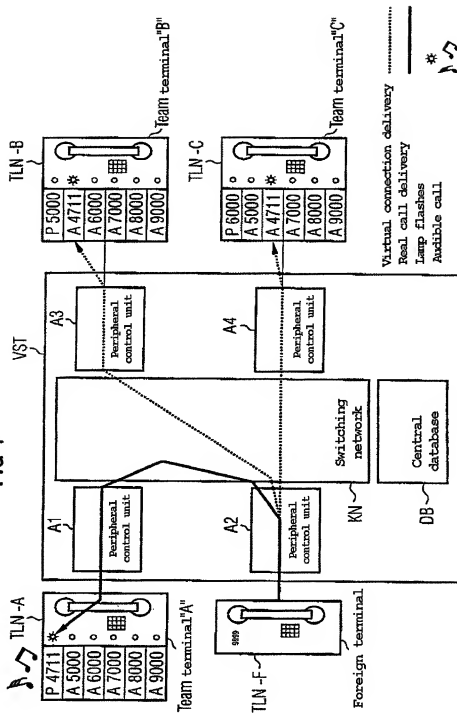


FIG 2

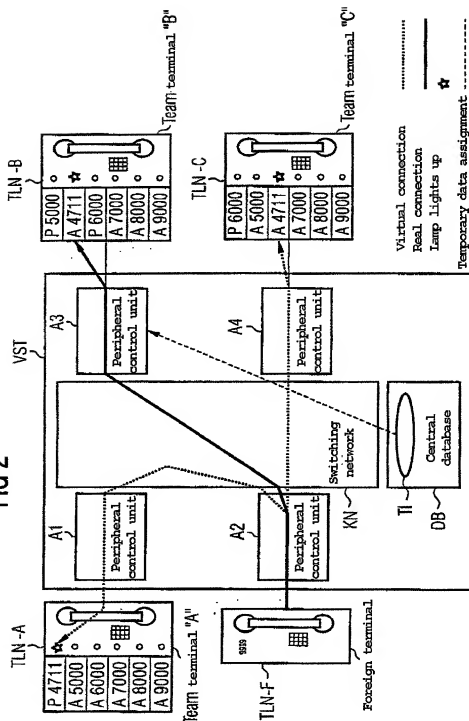
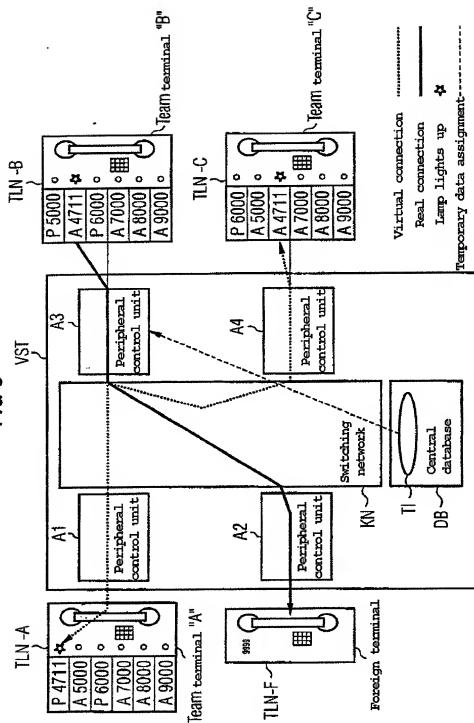


FIG 3



Declaration and Power of Attorney For Patent Application

Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

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I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Verfahren zur Behandlung eines
ankommenden oder abgehenden Rufes
zu oder von einer
Teilnehmerendeinrichtung einer
Teilnehmergruppe

Method for processing an incoming or
outgoing call to or from a subscriber
terminal of a subscriber group

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)

☐ hier beigefügt ist.

☒ am 20.09.2000 als

PCT internationale Anmeldung

PCT Anmeldungsnummer PCT/DE00/03279

eingereicht wurde und am 12.11.2001

abgeändert wurde (falls tatsächlich abgeändert).

(check one)

☐ is attached hereto.

☒ was filed on 20.09.2000 as

PCT international application

PCT Application No. PCT/DE00/03279

and was amended on 12.11.2001

(if applicable)

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

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I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

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Page 1

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Patent and Trademark Office-U.S. DEPARTMENT OF COMMERCE

INDR: 2590/Y 95-1 00/BV/h

German Language Declaration

Prior foreign applications
Priorität beansprucht

Priority Claimed

19946445.6

DE

28.09.1999

☒☐(Number)
(Nummer)(Country)
(Land)(Day Month Year Filed)
(Tag Monat Jahr eingereicht)Yes
JaNo
Nein(Number)
(Nummer)(Country)
(Land)(Day Month Year Filed)
(Tag Monat Jahr eingereicht)☐
Yes
Ja☐
No
Nein(Number)
(Nummer)(Country)
(Land)(Day Month Year Filed)
(Tag Monat Jahr eingereicht)☐
Yes
Ja☐
No
Nein

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PCT/DE00/03279

(Application Serial No.)
(Anmeldeseriennummer)

20.09.2000

(Filing Date D, M, Y)
(Anmeldedatum T, M, J)

anhängig

(Status)
(patentiert, anhängig,
aufgegeben)

pending

(Status)
(patentiert, pending,
abandoned)(Application Serial No.)
(Anmeldeseriennummer)(Filing Date D, M, Y)
(Anmeldedatum T, M, J)(Status)
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Page 2

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German Language Declaration

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Page 3

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81479 Muenchen		81479 Muenchen	
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Unterschrift des Erfinders		Inventor's signature	
Datum		Date	
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	
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Unterschrift des Erfinders		Inventor's signature	
Datum		Date	
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	
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Unterschrift des Erfinders		Inventor's signature	
Datum		Date	
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
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